AMENDMENTS TO THE CLAIMS

1. **(Currently amended)** A method for manufacturing a high-temperature fuel cell, comprising:

manufacturing a cathode;

applying an interface layer;

applying a current passage;

applying at least one electrolyte ~~and~~;

applying an anode;

applying an electrical insulating layer; and

thermally treating a whole construction of the high-temperature fuel cell, wherein after manufacturing the cathode, ~~a step of~~ applying ~~an~~ the interface layer, ~~an~~ the current passage, the electrolyte, the anode and ~~an~~ the electrical insulating layer are performed using the same apparatus, and wherein a metal-organic complex used to manufacture high-temperature fuel cell components to be applied, interfaced, and caked is prepared having the formula:

$[CH_3\text{-}(CH_2)_n\text{--}C(CH_3)_2\text{-}CO_2]_m Me^{+m}$, where

n is from 1 to 7,

m is a metal valence, and

Me is a material selected from the group consisting of Mg, Ca, Sr, Ba, Al, Sc, Y, In, La and lanthanides, Ti, Zr, Hf, Cr, Mn, Fe, Co, Ni, Cu, and the oxides of said metals for forming the cathode, the anode, the current passage, the electrolyte, the interface and electrical insulating layers.

2. **(Currently amended)** The method according to Claim 1 wherein, in the step of manufacturing the cathode, said metal-organic complexes are used as ~~the~~ a binding material, as a plasticizer and a pore-forming agent simultaneously while mixing the cathode mass to be formed.

3. **(Currently amended)** The method according to Claim 1, wherein ~~in the step of a~~ said metal-organic complex is ~~used to manufacture all high-temperature fuel cell components, said metal-organic complex is~~ used as ~~the~~ a liquid phase of organic carriers for thin-disperse solid phases of corresponding powder materials in order to manufacture the current passages, the electrolytes, the interface and the electrical insulating layers.

4. **(Original)** The method according to Claim l, wherein the metal-organic complex is used in a liquid phase to prepare a mixture-paste, said mixture-paste including rough and thin dispersions of ion- and electron-conductive corresponding powder materials to manufacture a cermet of the anode.

5. **(Currently amended)** The method according to Claim 1, wherein ~~in the step of a metal-organic complex is used to manufacture all high-temperature fuel cell components,~~ said metal-organic complex is used directly as the liquid phase.

6. **(Currently amended)** The method according to Claim 1, wherein said manufacturing of the ~~A method for manufacturing a carrier ceramic~~ cathode of a high-temperature fuel cell, ~~comprising~~ comprises:

jointly precipitating carbonates from a solution of lanthanum nitrate and manganese nitrate, thereby synthesizing a powder of an electrode material comprising a doped lanthanum manganite;

preparing a formable mass by isostatic compacting of a composition comprising said powder and an organic binding component, wherein said binding component comprises at least one carboxylate of a chemical element selected from the group consisting of La, Mn, Ni, Cr and Co, said chemical element being doped with an alkaline-earth element; and

heating said formable mass to form a carrier substrate at a temperature not higher than 1380°C.

7. **(Currently amended)** A method for manufacturing a carrier ceramic cathode of a high-temperature fuel cell, comprising:

jointly precipitating carbonates from a solution of lanthanum nitrate and manganese nitrate, thereby synthesizing a powder of an electrode material comprising a doped lanthanum manganite;

preparing a formable mass by isostatic compacting of a composition comprising said powder and an organic binding component, wherein said binding component comprises at least one carboxylate of a chemical element selected from the group consisting of La, Mn, Ni, Cr and Co, said chemical element being doped with an alkaline-earth element; and

heating said formable mass to form a carrier substrate ~~The method according to Claim 6~~,

~~wherein the heating said formable mass is performed~~ at a temperature not higher than 1380°C in order to achieve the caking without shrinkage of cathodes, wherein said cathodes are made from the powder of the electrode material described by the formula $La_xA_{1-x}MnO_3$ where A is either Mg, or Ca, or Sr, or Ba or their mixture 0.6<x<1.0.

8. **(Original)** The method according to Claim 6, wherein~~,~~ acids with a common formula $C_nH_{2n+1}O_2$ where n is C_6 to C_{12}, are used to prepare the organic binding component comprising said at least one carboxylate.

9. **(Original)** The method according to Claim 6, wherein the sum concentration of metals in the composition of the carboxylates is from 20 to 360 g per kg.

10. **(Original)** The method according to Claim 6, wherein the mass of the organic binding components is 3 to 15% relative to the formable mass.

11. **(Currently amended)** The method according to Claim 7, wherein the powder of the electrode material is mixed with the organic binding component ~~containing~~ ~~the~~ comprising Mn and La, or Co and La, or Cr and La, or Ni and La,~~Mn, La or Co, La, or Cr, La, or Ni, La,~~ doped by elements from the group of alkaline-earth elements, wherein the binding component generates, after its decomposition, compounds selected from the group consisting of: $La_ySr_{1-7}MnO_3$, or $La_ySr_{1-y}CoO_3$, or $La_ySr_{1-7}CrO_3$, or $La_ySr_{1-y}NiO$, where 0.6 < y < 1.0.

12. **(Currently amended)** A method for manufacturing a solid oxide electrolyte of the high-temperature fuel cell, comprising:

preparing an initial metal-organic compound~~, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized~~ using the reaction:

$$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_A + Me^{+A}(OC_mH_{2m+1})A \Rightarrow$$

$\Rightarrow Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_x(OC_mH_{2m+1})_{A\text{-}X}$, whereby obtaining a mixture comprising components selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)x(OC_mH_{2m+1})_{A\text{-}X}$, where

Me is a metal included in any functional component of the high-temperature fuel cell;

A is the valence of said metal;

X is a coefficient determined from the following inequality: $0<X<A$;

n is from 1 to 7; and

m is from 2 to 8;

heating a ceramic electrode up to a ~~predetermined~~ temperature not exceeding about 550°C;

applying the ~~prepared~~ metal-organic compound onto ~~the~~ a surface of the ceramic electrode; and

thermally treating the electrode with the formed electrolyte;

~~forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)x(OC_mH_{2m+1})_{A\text{-}X}$, where~~

~~Me is a metal included in the functional component of the high-temperature fuel cell;~~

~~A is the valence of the given element (metal);~~

~~X is a coefficient determined from the following inequality: $0<X<A$;~~

~~n is from 1 to 7; and~~

~~m is from 2 to 8~~ thereby obtaining a film of the solid oxide electrolyte of the high-temperature fuel cell.

13. **(Currently amended)** The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein ~~the~~ mixing of the initial components in the step of preparing the metal-organic compound is performed at the temperature of 80° to 100 °C.

14. **(Original)** The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein the step of synthesizing the metal carboxylates having the common formula:

$$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)\text{-}(CH_2)_n\text{-}CH_3)_A,$$

is performed by extraction of corresponding metals (Me^{+A}) from water solutions comprising materials selected from the group consisting of salts of the corresponding metals and suspensions of the corresponding metals in mineral acids.

15. **(Previously presented)** The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein the step of synthesizing a zirconium alcoholate $Zr(OC_mH_{2m+1})_4$ is performed during the interaction of a zirconium mineral salt with an alcohol and a metallic calcium during boiling.

16. **(Currently amended)** The method for manufacturing the solid oxide electrolyte according to Claim 15, wherein the metal-organic compound comprising zirconium is ~~modified~~ doped by at least one element selected from the group consisting of Mg, Ca, Sc, Y, Ce and lanthanides, and wherein said metal-organic compound is applied onto the surface of a carrier cathode by a method selected from the group consisting of rolling, painting, and spraying a gas-liquid emulsion, ~~while scanning the means~~ and applying the prepared composition along the cathode surface at a temperature of the heated cathode of 400 to 550°C.

17. **(Currently amended)** ~~A method for manufacturing a solid oxide electrolyte of the high-temperature fuel cell, comprising:~~

~~preparing an initial metal-organic compound, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized using the reaction:~~

$$\cancel{Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_A + Me^{+A}(OC_mH_{2m+1})_A \Rightarrow}$$

$$\cancel{\Rightarrow Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)x(\text{-}OC_mH_{2m+1})_{A\text{-}X};}$$

~~heating a ceramic electrode up to a predetermined temperature;~~

~~applying the prepared metal-organic compound onto the surface of the electrode;~~

~~thermally treating the electrode with the formed electrolyte;~~

~~forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)x(\text{-}OC_mH_{2m+1})_{A\text{-}X}$; where~~

~~Me is a metal included in the functional component of the high-temperature fuel cell;~~

~~A is the valence of the given element (metal);~~

~~X is a coefficient determined from the following inequality: O<X<A;~~

~~n is from 1 to 7; and~~

~~m is from 2 to 8;~~

~~wherein the step of synthesizing a zirconium alcoholate $Zr(OC_mH_{2m+1})_4$ is performed during the interaction of a zirconium mineral salt with an alcohol and a metallic calcium during boiling and wherein the metal-organic compound comprising zirconium is modified by at least one element selected from the group consisting of Mg, Ca, Sc, Y, Ce and lanthanides, and wherein said metal-organic compound is applied onto the surface of a carrier cathode by a method selected from the group consisting of rolling,~~

~~painting, and spraying a gas-liquid emulsion, while scanning the means applying the prepared composition along the cathode surface at a temperature of the heated cathode of 400 to 550°C, and~~ The method of Claim 16, wherein the step of applying the metal-organic compound onto the heated surface of the ceramic cathode is performed with the growth rate of film thickness of 10 to 25 μm per hour.

18. **(Original)** The method for manufacturing the solid oxide electrolyte according to Claim 14, wherein the metal-organic compound modified by at least one element selected from the group consisting of Mg, Ca, Sc, Y, and lanthanides, is applied onto the electrode surface heated up to the temperature not higher than 550°C.

19. **(Currently amended)** The method for manufacturing the solid oxide electrolyte according Claim 15, ~~on the surface of zirconium dioxide,~~ wherein the metal-organic compound comprising zirconium is applied onto the electrode surface heated up to the temperature of between about 300° ~~to~~ and about 400°C.

20. **(Currently amended)** The method for manufacturing the solid oxide electrolyte according to Claim 12, further comprising adding a powder of a modified zirconium dioxide ~~wherein in order to increase the~~ a ~~rate of applying the electrolyte film, a powder of a modified zirconium dioxide is added~~ to the metal-organic compound before applying said metal-organic compound to the surface of the electrode, thereby increasing a rate of obtaining said film.

21. **(Currently amended)** The method for manufacturing the solid oxide electrolyte according to Claim 20, wherein the powder of the modified zirconium dioxide ~~has in its composition~~ comprises about 95% of particles having a size less than 2 μm, and wherein ~~its~~ amount in the resulting mixture is between about ~~of~~ 0.1 ~~to~~ and about 2.0% by mass.

22. **(Previously presented)** The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein the step of applying the metal-organic compound onto the heated surface of the ceramic electrode in performed in an inert medium.

23. **(Currently amended)** ~~A method for manufacturing a solid oxide electrolyte of the high-temperature fuel cell, comprising:~~

~~preparing an initial metal-organic compound, wherein the metal-organic compound for manufacturing the solid oxide electrolyte is synthesized using the reaction:~~

$$\cancel{Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_A + Me^{+A}(OC_mH_{2m+1})_A \Rightarrow}$$

$$\cancel{\Rightarrow Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_x(OC_mH_{2m+1})_{A-X};}$$

~~heating a ceramic electrode up to a predetermined temperature;~~

~~applying the prepared metal-organic compound onto the surface of the electrode;~~

~~thermally treating the electrode with the formed electrolyte;~~

~~forming a mixture, wherein components of said mixture are selected from the group consisting of metal carboxylates and metal alcoholates, having the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_x(OC_mH_{2m+1})_{A-X}$, where~~

~~Me is a metal included in the functional component of the high-temperature fuel cell;~~

~~A is the valence of the given element (metal);~~

~~X is a coefficient determined from the following inequality: $0<X<A$;~~

~~n is from 1 to 7; and~~

~~m is from 2 to 8; and~~

The method–of Claim 12, wherein ~~in order to obtain~~ said electrolyte is a proton electrolyte, wherein said mixture ~~comprising~~ comprises at least one material of the chemical formula selected from the group consisting of $SrCe_{0.85}Gd_{0.15}[O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3]_6$ and $BaCe_{0.85}Gd_{0.15}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_6$, where n is 2 to 3, and wherein said mixture is applied onto the electrode surface heated up to the temperature not higher than 470°, ~~wherein~~ thereby forming a film of the proton electrolyte of the chemical formula selected from the group consisting of $SrCeO_{0.85}Gd_{0.15}O_3$ and $BaCeO_{0.85}Gd_{0.15}O_3$.

24. **(Original)** The method for manufacturing the solid oxide electrolyte according to Claim 12, wherein, after applying the prepared metal-organic compound onto the heated surface of the electrode, the obtained half-element is subjected to the thermal treatment at the temperature not higher than 1250°C.

25. **(Currently amended)** A method for manufacturing a current passage of a high-temperature fuel cell, comprising:

synthesizing a powder of an electron-conductive material comprising doped lanthanum chromite;

producing an ultra-disperse mixture from the synthesized powder in organic carriers; and

applying the ultra-disperse mixture from the synthesized powder in organic carriers ~~powder~~ on the carrier cathode with thermal treatment, wherein the thin dispersion

is produced by grinding the synthesized powder of the electron-conductive material of the doped lanthanum chromite until the ultra-disperse condition in the liquid medium of the mixture of metal-organic complexes of chrome, lanthanum and doping elements, wherein said metal-organic complexes have the formula:

$[CH_3\text{-}(CH_2)_n\text{--}C(CH_3)_2\text{-}CO_2]_mMe^{+m}$, where

n is from 1 to 7,

m is a metal valence, and

Me is a material selected from the group consisting of Mg, Ca, Sr, Ba, Al, Sc, Y, In, La and lanthanides, Ti, Zr, Hf, Cr, Mn, Fe, Co, Ni, Cu, and the oxides of said metals, and wherein the current passage film is manufactured by multiple steps of applying the thin dispersion onto the surface of the carrier cathode heated up to the temperature of forming~~, from the mixture of metal-organic complexes of chrome, lanthanum and doping elements,~~ of a gas-dense film of the doped lanthanum chromite of the composition similar to the thin-disperse powder synthesized individually.

26. **(Currently amended)** The method according to Claim 25, wherein ~~in order to manufacture the~~ said organic carriers ~~carrier of the thin-dispersion of powders of doped lanthanum chromite, the carboxylates of chrome, lanthanum and doping elements~~ are synthesized comprising the formula:

$Me^{+M}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_M$, where:

Me is a the metal selected from the group consisting of Cr, La, Sr, Ca, and Mg;

M is a metal valence~~; and~~

~~n is from 1 to 7~~.

27. **(Original)** The method according to Claim 25, wherein a ratio between solid and liquid phases in the prepared thin dispersion is from 1/100 to 15/100 mass.

28. **(Currently amended)** The method according to Claim 25, wherein the liquid mixture of ~~liquid carboxylates~~ of metal-organic complexes of chrome, lanthanum and doping elements comprises Cr, La, Sr, Mg, or Ca and wherein the concentration of Cr, La, Sr, Mg, Ca in ~~the~~ said mixture ~~of liquid carboxylates~~ is from 20 to 110 g per kg.

29. **(Currently amended)** The method according to Claim 25, wherein the step of applying the <u>ultra-disperse mixture from the synthesized powder in organic carriers</u> ~~the current passage~~ is performed by painting at the atmospheric pressure in an air medium.

30. **(Currently amended)** The method according to Claim 25, wherein the step of applying the ~~current passage~~ <u>ultra-disperse mixture from the synthesized powder in organic carriers</u> is performed by spraying ~~a prepared mixture of carboxylates~~ <u>said mixture</u> in an inert medium.

31. **(Currently amended)** A method for manufacturing a current passage of a high-temperature fuel cell, comprising:

synthesizing a powder of an electron-conductive material comprising doped lanthanum chromite;

producing an ultra-disperse mixture from the synthesized powder in organic carriers; and

applying the powder on the carrier cathode with thermal treatment, wherein the thin dispersion is produced by grinding the synthesized powder of the electron-conductive material of the doped lanthanum chromite until the ultra-disperse condition in the liquid medium of the mixture of metal-organic complexes of chrome, lanthanum and doping elements<u>, wherein said metal-organic complexes are prepared having a formula: $[CH_3-(CH_2)_n--C(CH_3)_2-CO_2]_mMe^{+m}$, where</u>

<u>n is from 1 to 7,</u>

<u>m is a metal valence, and</u>

<u>Me is a material selected from the group consisting of Mg, Ca, Sr, Ba, Al, Sc, Y, In, La and lanthanides, Ti, Zr, Hf, Cr, Mn, Fe, Co, Ni, Cu, and the oxides of said metals</u>, and

wherein the current passage film is manufactured by multiple steps of applying the thin dispersion onto the surface of the carrier cathode heated up to the temperature of forming, from the mixture of metal-organic complexes of chrome, lanthanum and doping elements, a gas-dense film of the doped lanthanum chromite of the composition similar to the thin-disperse powder synthesized individually, wherein the rate of thickness growth of the gas-dense film of the current passage on the surface of the carrier porous cathode is no less than 60 μm per hour.

32. **(Original)** The method according to Claim 25, wherein the temperature of forming the current passage from the doped lanthanum chromite on the surface of the carrier cathode does not exceed 600°C.

33. **(Currently amended)** A method for manufacturing an interface layer <u>of a high-temperature fuel cell</u>, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, <u>thereby obtaining a gas-dense film of said interface layer, wherein</u> said metal-organic complex ~~comprising the~~ <u>comprises a</u> formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:

Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;

A is the valence of the given chemical element (metal);

X is a coefficient determined from the following inequality: $0<X<A$:

n is from 1 to 7; and

m is from 2 to 8.

34. **(Currently amended)** The method according to Claim 33, wherein ~~in order to manufacture a gas-dense film of the interface layer, a mixture of compounds is used comprising the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:~~

X is equal to 0; and

Me is a metal selected from the group consisting of Mg, Ca, Sr, Ba, Ce, Pr, Sm, G, and Er.

35. **(Original)** The method according to Claim 33, wherein a total content of metals in a mixture of compounds is not higher than 20 g per kg.

36. **(Currently amended)** A method for manufacturing an interface layer, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, said metal-organic complex comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:

Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;

A is the valence of the given chemical element (metal);

X is a coefficient determined from the following inequality: $0<X<A$:

n is from 1 to 7; and

m is from 2 to 8,

wherein ~~the step of applying the metal-organic complex onto a~~ said heated substrate~~, the substrate~~ is heated up to a temperature not higher than 530°C in the air atmosphere, thereby forming a gas-dense film of the interface layer of a doped lanthanum chromite of no greater than 0.6 μm in thickness~~ on the surface of the doped lanthanum chromite activating the electrode reaction~~.

37. **(Currently amended)** The method according to Claim 33, wherein ~~in order to manufacture the gas-dense film of anti-diffusive interface layer, a mixture of compounds is used comprising the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:~~

X is equal to 0;

Me is a metal selected from the group consisting of Ce and doping elements Sm, Gd; and

n is from 1 to 2.

38. **(Original)** The method according to Claim 37, wherein the total content of metals in the mixture of compounds is not higher than 20 g per kg.

39. **(Currently amended)** A method for manufacturing an interface layer of a high-temperature fuel cell, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, said metal-organic complex comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:

~~Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;~~

A is the valence of the~~ given chemical element (~~metal~~)~~;

~~X is a coefficient determined from the following inequality: 0<X<A:~~

~~n is from 1 to 7; and~~

m is from 2 to 8,

~~wherein in order to manufacture the gas-dense film of anti-diffusive interface layer, a mixture of compounds is used comprising the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:~~

X is equal to 0;

Me is a metal selected from the group consisting of Ce and doping elements Sm, Gd; and

n is from 1 to 2; and

wherein ~~the~~ a mixture of metal-organic complexes is applied onto a substrate heated up to a temperature not higher than 380°C in an atmosphere of an inert gas, thereby forming a gas-dense anti-diffusive film of the interface layer of not greater than 10 μm in thickness on the surface of a doped cerium oxide.

40. **(Currently amended)** The method according to Claim 33, wherein in order to manufacture the interface layer protecting a previous layer from a restorative gas medium, a mixture of compounds is used comprising the formula:

$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:

Me is a metal selected from the group consisting of Zr, Y, La and lanthanides;

A is the valence of the~~ given chemical element (~~metal~~)~~; and

X is an integer from 1 to A.

41. **(Original)** The method according to Claim 40, wherein the total content of the zirconium and doping elements in the mixture is not higher than 50 g per kg.

42. **(Currently amended)** A method for manufacturing an interface layer of a high-temperature fuel cell, comprising:

synthesizing a metal-organic complex;

applying the metal-organic complex onto a heated substrate, said metal-organic complex comprising the formula: $Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:

~~Me is a metal selected from the group consisting of Cr, Mn, Co, Ni, Cu, Y, Zr, La and lanthanides, Mg, Ca, Sr, and Ba;~~

~~A is the valence of the given chemical element (metal);~~

~~X is a coefficient determined from the following inequality: 0<X<A:~~

n is from 1 to 7; and

m is from 2 to 8,

~~wherein in order to manufacture the interface layer protecting a previous layer from a restorative gas medium, a mixture of compounds is used comprising the formula:~~

~~$Me^{+A}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{A\text{-}X}(OC_mH_{2m+1})_x$, where:~~

Me is a metal selected from the group consisting of Zr, Y, La and lanthanides;

A is the valence of the ~~given chemical element (~~metal~~)~~; and

X is an integer from 1 to A; and

~~further comprising the step of~~ applying ~~the~~ a mixture of said metal-organic complexes ~~is performed~~ by painting the substrate heated up to the temperature not higher than 430°C in the atmosphere of an inert gas, thereby forming a protective interface layer of not greater than 5 μm in thickness on the surface of the doped zirconium dioxide.

43. **(Original)** The method according to Claim 42, wherein the atmosphere of the inert gas is selected from the group consisting of Ar, N_2, and CO_2.

44. **(Currently amended)** A method for manufacturing a cermet fuel electrode~~s~~ of a high-temperature fuel cell, comprising:

forming, on ~~the~~ a solid electrolyte in ~~the~~ contact with an internal air electrode, a first cermet layer of the electrode ~~consisting of~~ comprising a rough-disperse electron-conductive material selected from the group consisting of metallic nickel and cobalt, and a rough-disperse ion-conductive material ~~on the surface of~~ based on a ~~the~~ doped Zirconium dioxide or doped Cerium oxide ~~electrolyte~~; and

forming, on the rough-disperse layer, a separate thin-disperse electron-conductive porous multi-phased layer comprising a metallic material selected from the group consisting of the nickel and cobalt, and ion-conductive doped material comprising cerium oxide by applying and subsequent heating a mixture-paste consisting of the thin-disperse components with a binder onto said solid electrolyte, wherein a cermet fuel electrode is manufactured by steps of simultaneous forming the rough- and thin-disperse components of the porous multi-phased layer~~, and applying the mixture paste onto the electrolyte~~

~~being in the contact with the internal air electrode~~, and wherein the mixture-paste is prepared by mixing the powders of the rough-disperse electron-conductive material with the rough-disperse ion-conductive material comprising electrolyte, thin-disperse ion-conductive material comprising doped cerium oxide, and liquid phase of metal carboxylates selected from the group consisting of nickel carboxylate and cobalt carboxylate, said liquid phase comprising the formula:

$Me^{+m}(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_m$, where:

Me is selected from the group consisting of Ni and Co;

m is the metal valence;

n is from 1 to 7; and thereby

said paste during the thermal treatment form[s]ing the electron-conductive porous multi-phased layer binding to each other the rough- and thin-disperse phases forming the cermet of the fuel electrode.

45. **(Canceled)**

46. **(Original)** The method according to Claim 44, wherein a ratio of solid and liquid phases in the produced paste is within the range from 1/3 to 5/7.

47. **(Currently amended)** The method according to Claim ~~45~~ 44, wherein ~~the~~ a concentration of metal selected from the group consisting of nickel and cobalt in said liquid phase of metal carboxylates is from 20 to 70 g per kg of the carboxylate.

48. **(Original)** The method according to Claim 44, wherein the metal powder selected from the group consisting of nickel and cobalt is added in the ratio of the metal powder to the electrolyte of 1.1/1.0.

49. **(Original)** The method according to Claim 44, wherein the rough-disperse particles of the metallic material selected from the group consisting of nickel powder and cobalt powder have a regular spherical structure with a diameter of 10 to 15 μm.

50. **(Original)** The method according to Claim 44, wherein the synthesized rough-disperse electrolyte powder has a thread-like shape, and the ratio between the length and diameter of the particle is no less than 10:1, when the particle diameter is 5 to 10 μm.

51. **(Currently amended)** The method according to Claim 44, wherein the thin-disperse powder of the doped cerium oxide contains ~~in this composition~~ no less than 96% of particles having a diameter less than 2.0 μm.

52. **(Currently amended)** The method according to Claim 44, wherein the step of applying the mixture-paste onto the solid electrolyte is performed by painting in the air medium at room temperature and an atmospheric pressure.

53. **(Currently amended)** The method according to Claim 44, wherein the ~~half-element~~ the solid electrolyte with the applied wet mixture-paste is subjected to a thermal treatment in a vacuum at a temperature not higher than 400°C and a residual pressure not greater than 0.1 atmosphere.

54. **(Currently amended)** A method for manufacturing an electrical insulating layer of a high-temperature fuel cell, comprising applying ~~wherein~~ a mixture of metal-organic complexes onto a surface to be insulated~~is used as the initial material for applying the electrical insulating layer~~, said mixture comprising the formula:

$Me^{+A}[(O_2C\text{-}C(CH_3)_2\text{-}(CH_2)_n\text{-}CH_3)_{1\text{-}X}(OC_mH_{2m+1})_x]_A$, where:

n is from 1 to 7;

m is from 2 to 8;

Me is a metal selected from the group consisting of Mg, Al, Zr, Y, Ca, La and lanthanides;

A is the metal valence; and

X is from 0 to 1.

55. **(Currently amended)** The method according to Claim 54, wherein ~~the step of applying the electrical insulating layer onto the~~ said surface to be insulated is heated ~~performed when heating the high-temperature fuel cell being manufactured~~ up to a temperature not higher than 600°C.

56. **(Original)** The method of Claim 1, wherein the electrolyte is selected from the group consisting of doped cerium oxide and doped zirconium oxide.